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DATA EVALUATION RECORD

1. Chemical: CN-11-4962
diglycolamine salt of dicamba
(2-methoxy-3,6-dichlorobenzoic acid)
2. Test Material: Formulated Product
40.15% dicamba
3. Study Type: Freshwater Invertebrate Acute Toxicity
Species Tested: Daphnia magna
4. Study ID: Forbis, A.D. and S. Frazier (1986) Static
Acute Toxicity Report No. 34107. Acute
Toxicity of CN-11-4962 to Daphnia magna.
Prepared by ABC Labs, Columbia, MO. Submitted
by Sandoz Crop Protection Corporation, Chicago,
IL. EPA Accession No. 263863.
5. Reviewed By: Thomas M. Armitage
Fisheries Biologist
EEB/HED
Signature: *Thomas M. Armitage*
Date: 9-17-86
6. Approved By: Raymond W. Matheny
Supervisory Biologist
EEB/HED
Signature: *Raymond W. Matheny*
Date: 9-17-86
7. Conclusion:

The study was conducted according to accepted protocol. With 48-hour $EC_{50} > 400$ ppm, the diglycolamine salt of dicamba may be practically nontoxic to Daphnia magna. However, this study does not fulfill the Guidelines requirement for an acute toxicity determination using a freshwater invertebrate. This is because the pH of the water in the test chambers was measured to be 8.5 at the end of the study. Without information describing the hydrolysis of the test material at this pH, it is not possible to determine actual levels of exposure.

8. Recommendation:

This study may be upgraded to fulfill Guidelines requirement if hydrolysis data indicate that the test material did not breakdown during the study. Hydrolysis data must therefore be submitted. Alternatively, the study could be repeated at a lower pH or using measured concentrations.



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9. Background:

The study, an acute toxicity determination for a freshwater invertebrate species using the diglycerol-amine salt of dicamba, was submitted to fulfill testing requirements for full registration of the herbicide.

10. Discussion of Individual Test: N/A.

11. Materials and Methods:
(Definitive Test)

- a. Test Animals: were first instar Daphnia magna (less than 24 hours old) cultured at the ABC facilities.

Test system: The static Daphnia bioassay was conducted in 250 mL glass beakers containing 200 mL of ABC aged well water. Static exposure was undertaken at 20 °C. Lighting was maintained at 50 to 70 foot candles on a 16-hour daylight photoperiod, with 30 minute simulated dawn and dusk periods.

- b. Dose: Static bioassay using nominal concentrations.

- c. Design: 20 daphnids per level 5 dose (0, 100, 180, 320, 560, and 1000 mg/L).

- d. Statistics: The 24-hour and 48-hour LC₅₀ values and corresponding 95-percent confidence limits were determined by an LC₅₀ computer program developed by Stephan (1978). This program calculated the LC₅₀ statistic and its 95-percent confidence limits using the binomial, moving average angle, and probit methods because no one method is appropriate for all possible sets of data.

12. Reported Results:

The study authors found that the 48-hour EC₅₀ was > 1000 mg/L. All results were based on nominal concentrations of 0, 100, 180, 320, 560, and 1000 mg/L. The no-effect concentration based on the lack of mortality and abnormal effects was 1000 mg/L after 48 hours.

13. Study Authors' Conclusions/QA Measures:

48-hour EC₅₀ > 1000 mg/L.

"The study was conducted following the intent of the Good Laboratory Practice Regulations, and the final report was reviewed by Analytical Bio-Chemistry Laboratories' Quality Assurance Unit. All organized raw data was provided to Velsicol Chemical Corporation, with a copy retained at Analytical Bio-Chemistry Laboratories."

14. Reviewer's Discussion and Interpretation of the Study:

- a. Test Procedures: The procedures followed were in accordance with protocols recommended by the Guidelines. However, formulated product containing only

40.15% dicamba was used as test material. Therefore, the LC₅₀'s are adjusted to determine the LC₅₀ on the basis of 100% dicamba. The only ingredients in the formulation used are the dicamba salt and water. The test water pH of 8.5 would indicate that some hydrolysis of the test material may have occurred. Therefore, the study is classified as "Supplemental" pending the receipt of hydrolysis data.

- b. Statistical Analysis: No statistical analysis was required to determine the LC₅₀ because no mortality was observed during the course of the study.
- c. Discussion/Results: With 48-hour EC₅₀ > 400 ppm, the diglycoamine salt of dicamba may be practically nontoxic to Daphnia magna on an acute basis. The study, however, does not fulfill Guidelines requirements because of the high test water pH.
- d. Adequacy of Study:
 - 1. Classification: Supplemental.
 - 2. Rationale: The study was conducted in accordance with accepted protocol. The LC₅₀ was adjusted because the formulation tested contained only 40.1% dicamba. However, the test water pH of 8.5 indicates that some hydrolysis of the test material may have occurred. The study will be upgraded to fulfill the Guidelines requirement if hydrolysis data indicate that breakdown has not occurred.
 - 3. Reparability: Study may be upgraded to Core upon receipt of hydrolysis data.

15. Completion of One-Liner for Study:

One-liner form completed August 18, 1986.

16. CBI Appendix: N/A.

TABLE 3

Mortality Rates and Water Quality Measurements During the
Acute Toxicity of CN-11-4962 to Daphnia magna

Nominal Concentration (mg/l)	Percent Mortality Hours		Water Quality					
			0 hours			48 hours		
	24 hr.	48 hr.	Temp. °C	D.O. ^a mg/l	pH ^b	Temp. °C	D.O. ^a mg/l	pH ^b
Control	0	0	19	8.1	8.3	20	8.2	8.5
100	0	0				20	8.2	8.6
180	0	0						
320	0	0				20	8.2	8.6
560	0	0						
1000	0	0				20	8.1	8.5

^aDissolved oxygen concentrations - Dissolved Oxygen System (YSI Model 54).

^bpH - pH Probe (Corning Model 476182) used with a Corning Model 125 pH and mV meter.

NOTE: Dissolved oxygen saturations at the test temperature of 19 and 20°C are 9.3 and 9.2 mg/l, respectively.

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